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Wars, Local Political Institutions, and Fiscal Capacity: Evidence from Six Centuries of German History*

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Abstract

We study the effect of warfare on the development of state capacity and representative institutions using novel data on cities and territories in the German lands between 1200 and 1750. More specifically, we show that cities with a higher conflict exposure establish more sophisticated tax systems, but also develop larger councils, councils that are more likely to be elected by citizens, and more likely to be independent of other local institutions. These results are consistent with the idea of a trade-off between more efficient taxation and power sharing proposed in earlier work. We make headway on establishing a causal role of wars by using changes to German nobles' positions within the European nobility network to instrument for conflict.

Keywords: WARFARE; POLITICAL INSTITUTIONS; STATE CAPACITY

JEL Classification: N13; P48; R11

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1 Introduction

In the European context it has long been argued that wars fostered state formation (Tilly, 1975). This includes the political representation of citizens in national assemblies (Downing, 1993; Stasavage, 2010) and the development of sophisticated nation-wide systems of taxation to broaden the tax base and to raise tax revenues, for instance via income taxes.[1] Examples of this are the first income taxes in Britain due to the Napoleonic Wars, or in the U.S. at the start of the Civil War (Besley and Persson, 2009).

Representative political institutions and sophisticated tax systems, however, evolved much earlier at the sub-national level, namely in the cities (Stasavage, 2011),[2] long before the occurrence of such institutions at the national level in the 18th and 19th century. For example, after a 20-months long siege by the troops of the Archbishop of Cologne in 1389, the city of Dortmund introduced a 5% income tax in 1393 to cope with the wartime debt burden. In 1400, the citizens of Dortmund revolted and demanded more representation on the city council (*Rat*). This led to a reform of the council to include the so-called *Zwölfer* ("The Twelve") who henceforth represented the citizens' interest.

What explains this relationship between warfare, inclusive political institutions, and more efficient systems of taxation at the local level? Tilly (1975) hypothesizes that rulers, especially those of smaller polities with a weaker position, required the consent of their people to increase tax revenues to finance warfare.[3] To acquire such consent, Tilly claims that rulers offered political powers in exchange. Wars are therefore crucial shocks to disturb equilibria in which rulers first tax sectors

[1] Income taxes are sophisticated compared to simpler forms of taxation like trade or head taxes that do not require an infrastructure to survey the wealth or income of the population. See Besley and Persson (2013, p. 59): "To collect trade taxes just requires being able to observe trade flows at major shipping ports. Although trade taxes may encourage smuggling, this is a much easier proposition than collecting income taxes, which requires major investments in enforcement and compliance structures throughout the entire economy."

[2] See Wahl (2018) for work on the evolution of representative political institutions in German cities during the Middle Ages.

[3] Stasavage (2011) argues that smaller city states were able to build up fiscal apparatuses because they were smaller and could more easily solve the coordination between taxation and spending priorities. Rubin (2017) makes the more general observation that rulers need legitimacy and coercive power. Assemblies can provide both: democratic legitimacy and tax revenue needed to coerce.

of the economy over which they have more power,[4] as opposed to sectors where increased taxation requires the consent of the people which has to be acquired by surrendering political powers. Since wars were expensive, they easily forced rulers to raise tax revenues beyond what could be obtained without asking for consent.

This theory can potentially explain the effect of warfare on the evolution of inclusive political institutions and the development of more elaborate forms of taxation at the local level much before the 19th century when such institutions evolved at the national level. However, so far there is no empirical evidence to support it.

Studying how warfare affected the evolution of political institutions and tax systems at the sub-national and especially at the city level is challenging. Oftentimes such data is hard to find for a sufficiently large sample and period of time. However, the importance of cities as precursors of nation-wide systems of sophisticated taxation and representative political institutions can hardly be overstated. In pre-industrial Europe, cities were the driver of political and economic innovation (Wahl, 2018), and the primary providers of fast tax revenues to finance warfare (Van Zanden, Buringh and Bosker, 2012). They were also fundamental drivers of growth. Bosker, Buringh and van Zanden (2013) argue that local participative institutions in cities explain the urban development that allowed Europe to eventually outpace the Islamic world. This view is consistent with recent theories on citizens' involvement in governing and the efficiency of taxation (Acemoglu, Ticchi and Vindigni, 2011).

In this paper, we present novel data on the universe of cities in the German Lands from 1200 to 1750 which we digitized from city-level records. We show that higher incidences of violent conflicts had a positive effect on the evolution of representative political institutions and sophisticated tax systems at the local level. Information on cities is observed in every decade for more than 2,300 cities and was obtained from the *Deutsches Städtebuch* Keyser (1939-1974). Our data have three important features that allow us to study the relation between warfare, representative political institutions, and sophisticated methods of taxation at a granular level.

[4] As in the two-sector model of Hoffman and Rosenthal (1997) where a ruler controls one sector which he can tax freely while in the other sector the consent of the elite is required.

First, we observe crucial information each city's political institutions to measure the citizen's electoral power, representativeness of institutions, and the division of power. To capture citizen's electoral power we consider as outcome whether citizens could elect their city council without the interference of the local ruler. Representativeness is proxied by the size of the council which has been argued to be positively related (Kjaer and Elklit, 2014). We measure the division of power by considering councils on which neither members of the executive nor the judiciary are present. Our focus on councils as representative political institutions is motivated by the fact that they were the "chief means of seeking consent [to tax] at which representatives from different parts of a society would be able to express themselves. (Stasavage, 2016, p. 147).

Second, we collected detailed information on the number and types of taxes levied in 267 large cities that are also covered in Bairoch, Batou and Chèvre (1988). We construct measures of the sophistication of a city's tax system as the share of income, wealth, and inheritance taxes among the total taxes raised. This provides us with a novel way to assess the impact of warfare on a city's tax base and the quality of its taxes over a long period of time and much before the introduction of nation-wide systems of income taxes in the 18th and 19th century.

Third, we observe violent conflicts that directly affect the city, such as sieges, nearby battles, sackings, or (partial) destruction. We are the first to extend data on violent conflicts back to the 13th century and to provide a level of detail on the types of conflicts that is not available in conventionally used sources that focus on battles, such as Clodfelter (2008).

A key challenge for identification is the potential endogeneity between warfare and political institutions and taxation. This may be due to issues of reverse causality as conflict may not only force the evolution of more efficient tax systems, but that a higher ability to increase tax revenues could lead to increased participation in wars. A similar argument is made by Gennaioli and Voth (2015) in the context of warfare and state capacity.

To give our estimates a causal interpretation, we exploit changes in the nobility networks across more than 680,000 German and European nobles to instrument for conflict intensities. To make this instrument arguably more plausible, we control for the number of direct links of the nobles.

This means that we exploit variation in the parts of the network that are not a direct choice of the nobles themselves (as their direct links would be) but that affect their centrality in the network. We show that as the centrality of a territory's nobles decreases, the more likely it is to be involved in subsequent violent conflicts.[5]

We find positive and significant effects of conflict intensity faced by cities and the evolution of representative political institutions and a more sophisticated tax system. We measure conflict intensity as the share of cities of a territory that experience a violent conflict in a given decade. Our instrumental variables regressions show that a one percentage point increase in this conflict measure is associated with a 14.8% increase in the probability that citizens elect the council without interference of the local ruler, a 13% increase in the size of the council, and a 23% decrease in the probability that the executive and judiciary are represented on the council relative to the outcome averages. These findings are robust to different definitions of territories or the instrument, assignment of conflicts from the territory to the city-level, or sample composition. Our results can explain 27% of the overall increase in citizens electing their councils, and 20% in the overall increase of council sizes between 1200 and 1750. While the independence of councils over this time period has declined, it would have declined 24% more in the absence of all warfare over the entire period.

The results on the relation between warfare and taxes show a negative effect on the number of taxes raised by a city but an increase in the efficiency of the tax system. We also find evidence of long-term dynamics that reinforce this development. Fifty years later, a one percentage point increase in warfare is associated with an increase in the share of sophisticated taxes by 17 to 24%. This result can explain between 33 and 57% in the overall increase in sophisticated forms of taxation between 1200 and 1750.

We contribute to the following strands of the literature.

First, based on the theoretical work by Tilly (1975, 1990) a rich empirical literature has studied the relation between warfare and political institutions (e.g. Downing, 1993; Dincecco, Federico

[5] Benzell and Cooke (2018) show a link between cross-country kinship ties among European monarchs and reduced conflict intensity in Europe over time.

and Vindigni, 2011; Karaman and Pamuk, 2013; Dincecco and Wang, 2018). However, Stasavage (2016, p. 155) points out that so far, "the evidence suggests some causal link between warfare and representative institutions, although of course we do not know in which direction causality runs." We therefore contribute two insights to this debate by i) providing evidence of a positive causal effect that runs from warfare to representative political institutions and ii) by presenting the first evidence of this relationship using granular sub-national data over a long period of time.

Second, previous work studying the impact of warfare on taxation has mainly focused on tax revenue and on the *quantity* rather than the *quality* of taxes (e.g. Besley and Persson, 2009; Dincecco et al., 2011; Dincecco and Prado, 2012; Scheve and Stasavage, 2010, 2012; Voigtländer and Voth, 2013; Gennaioli and Voth, 2015). This difference matters. The inability to broaden the tax base by moving from trade to income taxes has been related to the persistence of weak states Herbst (2000).[6] We provide new evidence on the relationship between warfare and the evolution of sophisticated systems of taxation that provide a broader tax base and a more efficient way to raise tax revenues.

The rest of this paper is structured as follows. Section 2 discusses the related literature. Section 3 introduces the time-varying city-level data providing us with information on German cities, the conflicts they experienced, their political institutions, and the taxes they collect. It then describes the genealogical data on the German nobility, as well as the construction of nobility network measures. The empirical strategy and results are described in section 4. We first describe the instrumental variables strategy and then discuss the OLS and IV results for the effect of conflict intensity on the inclusiveness and democratization of political institutions, and on state capacity as measured by the number and types of taxes collected. The final section 5 concludes.

[6]Even nowadays poorer countries are characterized by a less sophisticated tax system and narrower tax bases, suggesting a substantial role of taxation in development and growth (see Burgess and Stern, 1993).

2 Related Literature

The historical roots of state capacity and its relationship with warfare is prominently studied by Tilly (1975, 1990). He argues that the increasing cost of warfare following military innovations in pre-modern Europe created a demand for more efficient means of extraction of war funds. It was this need for extraction that gave rise to systems of taxation, the expansion of state capacity, and the emergence of the nation state. Besley and Persson (2009, 2010) develop a formal theoretical framework for modelling the determinants of state capacity.[7] In their framework, warfare and conflict are key drivers of the development of state capacity, as states develop centralized systems of taxation to finance warfare. Inclusive political institutions can have an impact on state capacity but are taken as exogenous. In theoretical work, the direction of causation in the nexus between warfare, state capacity and inclusive political institutions is ambiguous.

Downing (1993) argues that states relying on internal sources of revenue during the military revolution built extensive autocracies. A standing army could potentially be used for two purposes. Professional soldiers sworn to the local ruler could not only deter and defend against outside forces but could also be employed to oppress internal opposition from the local populace or elites. Stasavage (2016), on the other hand, argues that the need to finance wars came with a trade-off for rulers. To obtain more war funds rulers were compelled to offer their subjects a certain degree of political power via representative institutions. This line of argumentation is particularly relevant for Germany where the high degree of geographic fragmentation created relatively weak rulers. Stasavage (2016, p.155) notes that: "the evidence suggests some causal link between warfare and representative institutions, although of course we do not know in which direction causality runs."

Studies of the nexus between warfare, state capacity, and democratic institutions are scarce. A notable exception is Dincecco et al. (2011), who explore correlations between the threat of external conflict, the need for taxation and subsequent constitutional reform in nineteenth-century Italy. However, most previous work has considered either conflicts and institutions, or conflicts and

[7] Besley and Persson (2013) point out that *fiscal capacity* would be the more precise term to describe what is typically coined *state capacity*.

state capacity, but not the joint relation between the three. In a theoretical contribution, Gennaioli and Voth (2015) model the effect of the military revolution on the need for increased state capacity to finance wars. The need for fiscal innovations to raise war revenues is also emphasized by Dincecco and Prado (2012) as key for the expansion of fiscal capacity. In a recent survey, Johnson and Koyama (2017) highlight Prussia and Russia as prime examples of "fiscal military states *par excellence*" due to the bellicose underpinnings of investments in state capacity in those regions.

The relationship between inclusive institutions and state capacity is, to our knowledge, less well-studied. Karaman and Pamuk (2013) provide evidence that tax collection was done more efficiently by representative regimes in urban economies. Authoritarian regimes, on the other hand, are shown to be more efficient at state building in rural and agrarian economies. In recent work, Angelucci, Meraglia and Voigtländer (2018) present causal evidence that the self-administration of tax collection in medieval English merchant towns was instrumental in creating more inclusive institutions; these towns were later granted representation in Parliament to allow the king to negotiate extraordinary taxes with them.

Finally, there is a large literature on the link between conflict (in a broad sense) and political institutions. Acemoglu and Robinson (2000) develop a model where elites strategically grant citizens the right to vote in order to avoid social unrest and revolution. This theory is brought to the data by Aidt and Franck (2015), who show that the threat of revolution induced votes in favor of democratization in the context of the British Great Reform Act of 1832. Most related to this paper is the theoretical contribution by Ticchi and Vindigni (2008), who postulate a model in which democratization follows endogenously from the need to conscript citizens to fight wars.

There is some evidence in the literature that suggests that both state capacity and inclusive institutions are beneficial for historic economic development.[8] Dincecco and Katz (2016) relate state capacity improvements to long-run economic growth and Dincecco (2015) also to the es-

[8]We show evidence for an effect of wars on both state capacity and inclusive institutions. We thus provide evidence for one pathway from wars to economic development, via state capacity and representative institutions. Of course, there are alternative explanations how wars affected long-run development. Dincecco and Onorato (2017) argue that cities grew faster as a result of wars as they offered a 'safe harbor' against pillaging. Hoffman (2015) claims that constant warfare led Europe to develop technologies that allowed it to conquer the rest of the world.

tablishment of twentieth-century welfare states.[9] Wahl (2018) shows that participative political institutions had a positive effect on economic outcomes of German cities, with the exception of craft guilds participating in the city council, which had had zero or negative impact.[10] Our work on the rise of state capacity and inclusive political institutions in the German lands is therefore informative about two of the sources of the long-run development of the German economy.

The contribution of this paper is its focus on the nexus between warfare, state capacity and inclusive political institutions. To identify causal relationships between warfare and our outcomes of interest, we turn to the literature on the determinants of historical conflict in Europe. In particular, we propose an instrument for conflicts that uses shocks to the position of German nobles in the wider European nobility network. Tilly (1975) notes a strong interrelation within the European nobility, a fact which according to Benzell and Cooke (2018) explains the general decline in violent conflicts between European states. They construct a network of the European ruling families and show that those with more interconnectedness tended to fight fewer wars. Polities governed by female rulers, on the other hand, were more likely to engage in conflict (Dube and Harish, 2018. Married queens were more effective at forging alliances and to use these strategically to fight wars. The rich backdrop of nobility networks as a driver of war and peace in Europe informs our choice of instrument, and is explained in more detail below.

3 Data

3.1 German City-Level Data

The main data source is the *Deutsches Städtebuch* (Encyclopedia of German Cities), a series of volumes edited by Erich Keyser (1939-1974) that provide information on each city in the German Empire incorporated prior to the compilation of the *Städtebuch*. The book offers a systematic treatise of the history of German cities from their foundation until the twentieth century. A separate

[9] Borcan, Olsson and Putterman (2018) take a perspective over 6 millenia and show that the current level of economic development across countries has a hump-shaped relationship with accumulated state history.

[10] This qualification on guilds supports Ogilvie (2014) who holds a skeptical view of guilds, because they typically generated a particularized trust among its own members, but did not automatically support more generalized trust supporting broader economic growth.

article is devoted to each city, following a consistent structure that divides the city history into twenty categories. These include sections on a city's past names, its geographic location, its local economy, educational and church systems, and so on. Particularly relevant for our purposes are section nine on the administration of the city, section eleven on warfare and conflicts experienced by the city, and section 13 on its financial system (including its means of taxation).

Political Institutions

We collect information on the different types and numbers of political institutions, as well as information on how and by whom the institutions were chosen. The types of political institutions we consider are the executive (mayors, sheriffs), legislative (councils) and judiciary (judges) branches of a city's administration. Using information from the *Städtebuch*, for each institution we record the year in which it is introduced or first mentioned, including start and (where applicable) end dates, the number of people within a given institution,[11] and the identity of members within each institution. The latter information allows us to capture cases where, for instance, the mayor of a city is also the judge or the head of the council. Finally, we collect data on the electing body for each institution.[12]

In a given century, the majority of cities were ruled by lords or bishops and, as a result, not fully self-governing.[13] City councils, however, had legislative and administrative power in the local context. Examining various characteristics of councils is therefore informative of the quality and representativeness of local political institutions. To this end, we construct three main political institution variables using the information collected from the *Städtebuch*. First, to capture the opportunities for political participation by citizens, we define an indicator taking a value of one if the council is directly elected by citizens without the interference of the local lord. Second, to capture the strength and breadth of the council, we define a count variable of the number of council

[11] A council is typically composed of multiple members and, though less common, also several mayors, judges or sheriffs could exist at the same point in time.

[12] Elections are classified into eight types: (i) direct elections by the citizens, (ii) by the citizens but with a final say by the local lord, (iii) by the lord only, (iv) by the council, (v) by the council with a final say by the lord, (vi) elections by other bodies (e.g. the court jury), (vii) unknown electoral bodies, or (viii) unknown electoral bodies with a final say by the lord.

[13] The exception are imperial cities, which were entirely self-governed.

members. Third, to capture the independence of the council and the division of power between the branches of administration within a city, we define an indicator taking a value of one if a judge, mayor or sheriff is a member of the council. Concretely, larger values of the first two variables and smaller values of the third variable are indicative of more inclusive political institutions.

Conflicts

Our main explanatory variable is a measure of a city's exposure to conflict. From the relevant section of the *Städtebuch*, we record for each city the dates and durations of violent conflicts in which the city was involved. The conflict information in the *Städtebuch* is detailed, and we are able to classify each conflict according to its type. We capture involvements elsewhere (if the city engaged in raids or wars in other territories), battles fought in the vicinity of the city, sieges, sackings, partial destruction of the city, complete destruction of the city, and occupation. We therefore have a rich set of information both on the occurrence of conflicts as well as their nature.

The level of detail with which we capture city-level instances of conflict is significantly more comprehensive than other frequently used sources, such as Brecke (1999) and Clodfelter (2008).[14] These sources begin in 1400 and 1494, respectively, while our data allows us to extend further back in history. More importantly, these sources focus primarily on battles. While battles are no doubt important considerations for local rulers, we are also able to capture concerns related to other forms of conflict. Indeed, extensive sieges or occupations (which can last months, years, or even decades) plausibly exert greater pressure on rulers to tax than more short-lived battle events.[15]

Taxation

The final component of the causal nexus we explore in this paper is state capacity. We focus on fiscal capacity - the state's ability to levy and collect taxes - and collect information on cities'

[14]Examples of the use of these battle datasets include Dincecco and Prado (2012), Kokkonen and Sundell (2017) and Iyigun, Nunn and Qian (2017a,b)

[15]To illustrate the advantage of our data, consider the conflict data used by Iyigun et al. (2017b), which combines Brecke (1999) and Clodfelter (2008). Their focus is on Europe, Northern Africa and the Near East during the period 1400-1900, for which they record a total of 2,787 battles. Our conflict data, which focuses on a much smaller geographical region (the German lands) records a total of 4,133 city-level conflict events for the same period. This is illustrative of the greater local detail we capture. Of course, our temporal focus is slightly different: our sample period consists of the years 1200-1750, during which we record a total of 3,582 city-level conflict events.

taxation from the *Städtebuch*. Due to data availability we collect this information only for the largest cities: the 267 German cities that appear in Bairoch et al. (1988). We are interested in exploring not only the establishment of systems of taxation, but also their sophistication. To this end, we categorize individual taxes into distinct types: (i) general taxation, such as head taxes and taxes without a specifically stated purpose, (ii) taxes on obtaining or maintaining citizen rights (Burgher taxes), (iii) property taxes (on houses or land inside the city), (iv) land taxes (on farms or land outside the city), (v) income and wealth taxes, (vi) inheritance taxes, (vii) tax on alcoholic beverages, (viii) business taxes (including taxes on guilds), and (ix) trade taxes, such as tariffs and duties. We consider a tax to be sophisticated if the activity to be taxed is not easily observable. Sophisticated taxes therefore include property taxes, income and wealth taxes, and inheritance taxes.[16] Unsophisticated taxes include general taxes, Burgher taxes, land taxes, alcohol taxes and trade taxes.

3.2 Data on Sovereign Territories

We link cities from the *Städtebuch* to sovereign territories using the *Euratlas* (Nüssli, 2009). In 100-year intervals, we observe the borders of all sovereign states of Europe. This allows us to geographically link each city in the *Städtebuch* to the territory to which it belonged each century. Figure A1 shows the evolution of these territories as well as the (fixed) location of the 2,340 cities in the *Städtebuch*.

3.3 Data on the German Nobility

To build a network of German nobility and link information about nobles to the cities in the *Städtebuch*, we combine two data sources. The first is the *Peerage* project (Lundy, 2018) which stores data on more than 680,000 European nobles. The *Peerage* database contains information on nobles' dates of birth, death, and marriages. In addition, we collect basic information on sex and age. Further, the *Peerage* contains information which allows us to link each noble to their parents, siblings, spouses and children. As an example, Figure A2 shows The Peerage entry for Georg Wil-

[16] Business taxes could plausibly be considered sophisticated. In our empirical analysis, therefore, we consider measures both including and excluding business taxes as sophisticated taxes.

helm, Duke of Braunschweig and Lüneburg. Based on this information, we are able to reconstruct the European nobility network at any given point in time.

To supplement this data, we digitize information from the *Europäische Stammtafeln* (European Family Trees, Schwennicke (1998)), in particular Volumes 1-1, 1-2 and 1-3. These volumes cover 379 family trees of ruling families in the German lands.[17] Figure A3 shows an example of a family tree for the dukes of Braunschweig and Lüneburg, and a detailed individual entry is shown in Figure A4. Note that this entry is the same individual, Georg Wilhelm, as identified in the *Peerage* example above. The *Stammtafeln* provide additional valuable information on locations of births, deaths, marriages and other events, which allows us to link individual nobles to cities and territories within the German lands. Where other information is missing in the *Peerage*, we also supplement this with data from the *Stammtafeln*.

We use the information on the locations and lives of nobles to link them spatially and temporally to the *Städtebuch* cities and *Euratlas* sovereign territories. We use the data on parental, sibling and marital ties between nobles to reconstruct the network of the German nobility each decade, yielding a potentially disconnected, undirected, unweighted graph.[18] We compute several statistics that characterize the network and nobles' relative positions within it. A commonly used measure of centrality is degree centrality: the number of direct links a noble has to other nobles. This simple measure, however, fails to capture the complexities of nobility networks in this time period. Rather, we would like to capture, for example, the importance of nobles whose links unite two separate dynasties. To our knowledge, the most appropriate measure which is tractable for disconnected networks is harmonic centrality, which is computed as:

$$H(x) = \sum_{x \neq y} \frac{1}{d(x, y)} \tag{1}$$

[17] In our empirical analysis, we concentrate on the network positions of nobles from Volume 1-1 only. These are nobles from the most important 174 ruling houses in the German lands, and therefore the key players determining war and peace in this period.

[18] We consider each of the following relationships to constitute a direct link between nobles: parent, child, sibling, spouse.

The harmonic centrality $H(x)$ is a measure of the distance of noble x to the rest of the network. The pairwise shortest-path distance $d(x, y)$ is calculated between x and each other noble y. A large value for $d(x, y)$ means that x is far from (and therefore poorly connected to) y. Taking the inverse of this distance and summing over all nobles y yields an intuitive measure where larger values correspond to higher centrality. Additionally, harmonic centrality provides a straightforward way to allow for unconnected nodes in the graph. For any two unconnected nobles x and y, we set $d(x, y) = \infty$ such that an unconnected noble-pair's contribution to $H(x)$ is zero. We calculate this measure for each noble alive in a given decade using the full *Peerage* sample of 680,000 individuals. In Figure A5 we provide an example of the largest component of such a network in the year 1460, with the most central nobles (according to the harmonic centrality measure) highlighted.

3.4 Descriptive Statistics

For the majority of our analysis, we follow Cantoni, Dittmar and Yuchtman (2018) and drop cities which are reported in a 'Small State of the Holy Roman Empire' in the *Euratlas*. This leaves 1,472 cities which we observe at decadal intervals for the period 1200-1750. Descriptive statistics for the cities in our main sample are reported in Panel A of Table 1. The first three variables capture the presence of the three main institutional branches in each city-decade. Executive, judiciary and legislative institutions are present in 47, 13 and 44 percent of city-decade observations, respectively. Turning to measures of institutional quality, 5 percent of councils are elected directly by citizens, and the average council has around 9 members. Finally, roughly one quarter of councils are not fully independent. That is, a mayor, sheriff or judge is also a member of these councils.

Our main measure of conflict exposure is defined on the *Euratlas* territory level. Since war and peace are determined by territorial lords, intuitively the impact of conflict will be felt in all cities in a territory. Concretely, we use a measure of conflict intensity, which takes the share of cities in a given territory that experience conflict in a given decade. The summary statistics for this variable in Panel A of Table 1 reveal substantial variability: while the average city-decade is relatively peaceful (only 2 percent of cities in its territory experienced conflict), there are periods

of intense warfare (where all the cities in the territory experience conflict).

To measure nobility network centrality, we use the harmonic centrality of the best-connected noble in a territory. We also construct the average degree centrality of nobles in a territory. Both these variables can intuitively be set to zero for those cities in territories without any members of the highest levels of aristocracy. The final four rows of Panel A of Table 1 report summary statistics for these variables. There is considerable heterogeneity: some territories have very well-connected nobles with a harmonic centrality four standard deviations above the mean, while some territories have nobles without any links at all.

As explained above, we only observe taxation information for the larger cities in Bairoch et al. (1988). Summary statistics for these cities are reported in Panel B of Table 1. For completeness, we report the same variables as for the full sample in addition to the taxation variables. On average, these cities have more well-developed political institutions. Since conflict and nobility measures are defined at the territorial level, values for these variables are very similar to those in the full sample. In the average Bairoch city-decade, 1.31 taxes are levied. There are predominantly 'simple' taxes, with 'sophisticated' taxes being relatively rare. These is considerable heterogeneity, however: some cities have four times as many sophisticated taxes as simple taxes. This suggests that in this time period, these larger cities were already beginning to develop relatively intricate systems of taxation, which is indicative of high degrees of fiscal (state) capacity.

3.5 Motivational Evidence

Before describing our empirical strategy and presenting our results in Section 4 below, we conduct a suggestive 'event study' exercise, using the Thirty Years' War as a motivating example. In particular, in Figures 1 and 2, we plot the evolution of citizens' involvement in electing the council, as well as the council size, separately for those cities that experienced and for those that did not experience conflict during this intense period of warfare. Strikingly, cities that were spared conflict stagnated in terms of their development of inclusive political institutions, in contrast to those cities which did see conflict in this period. This exercise is informative but, of course, only suggestive. We now turn to a formal empirical strategy with the aim of uncovering the joint causal effect of

warfare on local political institutions and fiscal capacity.

4 Empirical Strategy and Results

To study the relationship between inclusive political institutions and the kinds of taxes raised by a city with warfare in a sovereign territory, we regress

$$y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist} \tag{2}$$

where cities are indexed by subscripts i, sovereign states by s, and decades by t. We consider two types of outcomes y_{ist}.

The first are measures of the inclusiveness of political institutions, such as an indicator for whether citizens elect the council without interference of the local ruler, the size of the council, and whether members of the judiciary or executive are present on the council and thus could potentially exert influence on the legislative.

The second set of outcomes are the total number of different taxes raised by a city in a given decade. *Simple* taxes include easily observed quantities like head taxes, alcohol, or trade taxes, whereas *sophisticated* taxes require more elaborate enumeration of the population and their possessions. This includes wealth and income taxes, or inheritance taxes, i.e. assets that require more effort to accurately observe by the authorities. The tax outcomes are only collected for the larger Bairoch et al. (1988) cities.

The variable $\text{Conflict}_{s,t-1}$ measures the conflict intensity in a given state in the previous decade. This is to exclude the possibility that conflicts and changes in the outcome fall into the same decade t in which case it would not be obvious whether a conflict actually predates the outcome change.[19] Conflict intensity is defined as the number of cities in state s experiencing a violent conflict in decade t over the total number of cities in that territory times one hundred. Territorial borders are assigned to cities at the start of a given century. Border information is taken from the *Euratlas*.[20]

[19] For instance, a conflict may occur in 1404 while the political institution already changed in 1400, yet both events would be labeled with the decade *1400*.

[20] Since border changes are potentially endogenous to conflicts themselves, we later show robustness checks with

The regression includes city fixed effects α_i which capture time-invariant factors that lead to differences in the outcomes across cities. Aggregate shocks over time that affect all cities are absorbed by the decade fixed effects λ_t, whereas additional time varying city and institutional characteristics are included in the vector X_{ist} such as an indicator for whether a council is present or the average number of direct nobility network links of nobles in a territory.

All other variation in the outcome is left in the stochastic error term ϵ_{ist}. To account for heteroskedasticity and autocorrelation, we cluster standard errors at the territorial level. More precisely, we cluster observations at the level of 'territorial histories'. That is, we generate clusters of cities that shared the same history of territorial affiliations throughout our sample period.[21]

A concern with the baseline specification in (2) is that conflicts are potentially endogenous. Not only is warfare a choice of the local rulers, but also the causality between conflicts and political institutions may run both ways (Stasavage, 2016). For instance, autocratic regimes tend to be more involved in conflict (Lake, 1992; Bueno de Mesquita and Siverson, 1995; Bueno de Mesquita, Morrow, Siverson and Smith, 1999; Jackson and Morelli, 2007). As such a simple OLS regression of eq. (2) would underestimate the true effect of wars on the development of inclusive political institutions. We therefore attempt to resolve these potential issues via an instrumental variables strategy.

4.1 First-Stage Relation between Nobility Network Centrality and Conflict Intensity

We use changes in the centrality of ruling families as shocks to the conflict intensities experienced by German territories.[22] As explained in Section 3 above, we track the position of German nobles within the wider European nobility network, and compute measures of connectedness for these nobles and link them to the cities and territories in our sample. More central nobles can build on the support of a larger set of allies which makes attacking them relatively more costly for an

fixed borders by grouping together areas that have always belonged to the same states.

[21] For instance, if two cities were initially part of *Duchy X* and later on both part of *Kingdom Y*, they will be in the same territorial history cluster.

[22] The idea is similar to that of Benzell and Cooke (2018), who use links between European ruling houses to explain the aggregate decline in warfare propensity over the course of European history. Their analysis is on the level of European countries, whereas our focus is on territories within the wider German lands.

outside force.

The first stage regression to predict conflict intensities is specified as follows:

$$\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma \text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st} \tag{3}$$

where $\text{Centrality}_{s,t-1}$ is the harmonic centrality index value for the most connected noble in the state in $t-1$. The most influential noble would typically be the head of the ruling family.[23] In order to avoid concerns related to endogenously shifting borders, we assign the nobility centrality measures on the level of the territorial history.

An important control in the vector X_{ist} is the average direct connectedness of nobles in territory s. Variation in the harmonic centrality index used to construct $\text{Centrality}_{s,t-1}$ comes from two sources. First, from the direct links of nobles in territory s with other nobles in the European nobility network. Second, conditional on nobles' direct links, centrality may also vary due to changes in the structure of other parts of the network. It is this second type of variation which we wish to exploit, since network changes unrelated to the direct links of a state's nobility provide shocks to centrality that are exogenous to local economic, political and strategic developments. In short, by controlling for the direct links of a state's nobility, we shut down the first source of variation in $\text{Centrality}_{s,t-1}$, and identify the first-stage relationship using variation from deeper in the network structure.

To illustrate the chain between nobility, conflict and local political institutions, Figure A6 maps the spatial relationships of the first stage between harmonic centrality and conflicts in the year 1630, at the height of the Thirty Years' War. Figure A7 maps the raw spatial correlation between conflict and the number of political institutions that are elected by citizens in the same year. Given that this measure is computed for every state in each decade, there is no simple way of plotting these relations over time. However, the example of the Thirty Years' War in Figure A6 illustrates the hypothesized (negative) relationships very clearly. Cities in areas with a high degree of central-

[23] Other measures of centrality, such as the average or median centrality of nobles in the territory, are possible. We use such alternative methods to probe the robustness of our results.

ity tend to be less affected by violent conflicts during this period of intense warfare. Conversely, those with a low level of connectedness and a high warfare frequency show a higher propensity to have elected institutions.

More formal estimations of the first-stage relationship between nobility centrality and conflict intensity are reported in Table 2. In columns 1 and 2, we use the main nobility centrality definition in constructing our instrument: the harmonic centrality of the best-connected noble in the territory. Harmonic centrality is a strong negative predictor of conflict intensity, both with and without controls for immediate network links (degree centrality). A one-unit increase in the maximum harmonic centrality index of a given territory reduces its experienced conflict intensity by 1.3 percentage points.[24]

In the remaining columns of Table 2, we report first-stage results for alternative specifications of the instrument. In columns 3 and 4, we use the average harmonic centrality of nobles in a territory rather than the harmonic centrality of the best-connected noble. As additional an additional robustness check, in columns 5 and 6 we use the centrality not of nobles in the territory itself, but of nobles connected to nobles in the territory (we call these nobles *linked nobles*). Results are robust to these alternative definitions of the instrument, and the key first-stage result holds: territories that become less well-connected due to changes in the structure of the European nobility network see increases in their levels of conflict intensity.

4.2 Conflict Intensity and Local Political Institutions

4.2.1 Conflict Intensity and Council Elections

We now use the first-stage relationship between nobility centrality and conflict intensity in the instrumental variables framework described above to explore the relationship between warfare and local political institutions. The first outcome we consider is whether a city's citizens were involved in electing local councils. Concretely, in equation 2 above, y_{ist} will be an indicator taking a value of one if citizens elected the council without the interference of the local lord.

[24]The direction of this result is in agreement with results found by Benzell and Cooke (2018) for wars between countries.

Results from this exercise are reported in Table 3. In columns 1, we perform a simple OLS estimation of equation 2, in which we regress an indicator for whether citizens elected the council on the conflict intensity variable as well as city and decade fixed effects. Column 2 additionally controls for the presence of a council.[25] These estimates should be interpreted with caution, however, due to the likely downward bias arising from the reverse and negative relationship between conflicts and political institutions (that is, autocratic rulers are also likely to be more belligerent). Indeed, we do not find a systematic relationship between conflicts and council elections through a simple OLS regression.

We therefore turn to the instrumental variables strategy explained above, where we use shocks to nobility network centrality to generate exogenous variation in conflict intensity in a first stage. Column 3 reports the result from a parsimonious second stage of this IV framework, with no additional controls. We find a systematic positive relationship between conflict intensity and the probability that citizens elect local councils. This relationship is robust to controlling for council presence (column 4), and the immediate links of nobles in the territory (column 5).[26] Finally, in column 6 we include both controls, and still find a robust, positive effect of conflict intensity on the probability that citizens elect the local council.

Concretely, for a percentage point increase in conflict intensity induced by a reduction in a territory's network centrality, the coefficient reported in column 6 shows a 0.003 percentage point increase in the probability that citizens elect their council. The size of the estimated coefficient needs to be assessed with respect to the overall magnitudes associated with a given outcome. Relative to the average probability that citizens elect the local council, the effect reported in column 6 corresponds to a 12.6% increase.

To put this finding into context, consider that the average probability that citizens elected councils rose by 3.132% over the sample period, 1200-1750. Over the same period, the average city

[25]The establishment of a council is itself plausibly an outcome of conflict, which could raise concerns that it is a *bad control* in this specification. To dispel such concerns, throughout we will report results both with and without this control to show that results do not change.

[26]Recall that this allows us to exploit variation in network centrality arising only from changes in network structure beyond local nobility links.

experienced a conflict intensity of 2.360%. Using our estimate for the effect of conflict intensity on the probability that citizens elect their council, we can explain $\frac{0.003576 \times 2.360}{0.03132} \times 100 \approx 27\%$ of the increase in council elections over the period 1200-1750.

4.2.2 Conflict Intensity and Council Size

Our second measure of political representativeness is the size of the city council, where larger councils are taken to better represent the interest of the local citizenry. In our historical setting, council expansions are often associated with greater direct representation of citizens. The city of Braunschweig, for example, expanded its *gemeine Rat* ('common council') in 1386 to enable direct representation of citizens from Braunschweig's distinct municipal areas.[27] We report results using council size as the outcome of equation 2 in Table 4. As before, OLS results (columns 1 and 2) are likely biased downwards, but we nevertheless find a weakly positive, though insignificant, impact of conflict exposure on council size. Turning to our instrumental variables specification, we indeed find a larger and statistically significant effect.

Taking the richest specification in column 6, a one percentage point increase in conflict intensity causes the council to expand by 0.3 members. When compared to the mean council size of 3.3 members, this effect corresponds to a 9.3% increase. In addition to being more democratically chosen, as documented above, councils are therefore also becoming larger in size due to exposure to conflict. Again, putting this finding into context, conflicts explain $\frac{0.452014 \times 2.360}{5.5008} \times 100 \approx 20\%$ of the increase in council size over the period 1200-1750.[28]

4.2.3 Conflict Intensity and Division of Power

As a final measure of the quality of local political institutions, we consider a measure of the division of power between administrative branches in a city. In particular, if executive or judiciary branches also gain influence in the council, then the council's independence (and therefore its ability to represent citizens effectively) is jeopardised. To this end, we construct an indicator equal to one if

[27] For the modern era, see Kjaer and Elklit (2014) for an empirical test of the relationship between assembly size and representativeness.

[28] In our sample over the period 1200-1750, the average council size is 5.5008, the average conflict intensity is 2.36% and our estimation of the effect of conflict intensity on council size is 0.452.

a mayor, sheriff or judge is part of the city council and thereby lessens the division of power within the city.

Results from this exercise are reported in Table 5. The OLS regressions in columns 1 and 2 are once again likely to bias the estimated coefficient towards zero, so we immediately turn to the instrumental variables results in columns 3- 6. Coefficients are stable with the successive inclusion of controls, and are negative and statistically significant (or just-insignificant at conventional levels in the richer specifications). This suggests that conflict exposure also improves the representativeness of political institutions by making councils more independent of other local political interests. Taking the estimate from column 6, a one percentage point increase in conflict intensity decreases the likelihood of overlap into the council by 19.6% relative to the mean.

Over the sample period 1200-1750, the probability that a city had a council with overlaps from other branches of administration rose by 16.465%. Using our estimate for the effect of conflict intensity on overlaps and the mean conflict intensity, conflicts over this period increased council independence by $0.0165 \times 2.360 \approx 3.89\%$. Hence, in the absence of wars, council independence would have decreased by an additional $\frac{3.89}{16.465+3.89} \times 100 \approx 24\%$ over this period.

4.3 Conflict Intensity and Local Fiscal Capacity

Does the increased democratization of political institutions come with a greater ability to tax citizens? Due to data availability, we collected taxation outcomes only for the subsample of cities in Bairoch et al. (1988). Table 6 shows the results of regressing the number of taxes levied by rulers in these cities on conflict intensity. Since these tax regressions also suffer from similar endogeneity concerns as the political institution regressions above, we again instrument for conflict intensity using the centrality of German nobles. In order to implement our instrumental variables framework, however, nobility data from all cities are required in order to capture the complete network of German nobility and therefore accurately predict conflicts in a first stage. For this reason, we use the two-sample 2SLS (TS2SLS) estimator, which estimates the first stage in the entire sample and then uses the predicted conflict intensity values to estimate the second stage using the Bairoch

subsample (Pacini and Windmeijer, 2016). These results are reported in Table 7.[29]

For both the OLS and the TS2SLS regressions, we report the contemporaneous effect of conflict on taxation in period t in the top panels. The bottom panels show the long-term coefficient in decade $t + 5$ (fifty years later). This is because the short- and long-term response of the tax system to violence can be different. In the short run, the effect of the conflict (which in our data are mainly defensive in nature) may disrupt the system and lower the potential to tax due to destruction. In this case, the total number of taxes levied would decrease.

Indeed, the results in Table 7 show a negative effect of conflict on the number of in the short run. Notably, however, our measure of tax sophistication (the share of sophisticated taxes among all taxes levied by the city) *increases* in response to conflict, as reported in column 2. Strikingly, therefore, while conflict disrupts local systems of taxation, it directs efforts to tax into relatively more sophisticated methods. This result is robust to alternative specifications of the share: in column 3, we include general taxation in the denominator,[30] and in column 4 we treat business taxes as sophisticated.

While it is possible that a conflict may have been so severe as to send a city on a permanently lower growth trajectory, it can also have acted as an incentive to improve systems of taxation. Forward-looking rulers may seek to further develop the tax system in order to raise more funds for defence in the future, in particular by developing more sophisticated means of taxation to offset distortions created by an increased tax burden. Conflicts therefore potentially act as pressure to improve the available taxation technology.

Our results bear out this hypothesis. The patterns in Table 7 suggest that, in the long run, conflict negatively impacts the absolute number of taxes, but with simple taxes being replaced by increasingly sophisticated methods of taxation. As a result, in the decades following periods

[29]We also estimate regressions for local political institutions for this subset of cities. As in the taxation regressions, the analysis relies on the TS2SLS estimator in order to construct the first stage using the whole sample. Results are reported in Table A1. Effects are in line with those found for the full sample, though the magnitude of the effects is larger.

[30]General taxes have no direct interpretation as these are mainly an unlabeled kitchen-sink category. This happens when the text in the *Städtebuch* mentions the introduction of a *tax* but without naming the tax or describing its purpose any further.

of conflict, cities' tax systems stabilise at significantly higher levels of sophistication. Previous work notes this relationship for modern *national* systems of taxation (Besley and Persson, 2009). Our findings suggest that similar pressures also shaped *local* fiscal capacity in much earlier time periods.[31]

Concretely, our baseline measure of tax sophistication rose by 16.341% percent over the period 1200-1750. Using the mean conflict intensity and our estimate for the impact of conflict on tax sophistication, conflicts explain $\frac{3.913 \times 2.360}{16.341} \times 100 \approx 57\%$ of this increase.[32]

4.4 Robustness Checks

To assess the robustness of our results, we next relax assumptions made on the assignment of borders, the assignment of the conflict variable to the city- rather than the territory-level, the definition of the instrument, and the sample composition regarding the treatment of cities located in the so-called *small states* category.

4.4.1 Conflict Intensity Using Fixed Territorial Borders

Tables A2 and A3 report results for political institutions and tax outcomes with conflicts assigned using fixed borders. Since border changes are potentially endogenous to conflicts, we fix the border definition to territorial histories.[33] This means that we only consider borders that only contained the same set of cities over the sample period. The results are almost identical with the benchmark results which is true for both the political institutions as well as the tax outcomes.

[31] To explore what drives the increase in the share, we investigate the effect on the number of simple and sophisticated taxes separately. In the short run, conflict reduces both types of taxation, but simple forms of taxation fall much more sharply, therefore driving up the share of sophisticated taxes. In the long run, conflict reduces the number of simple taxes, while *increasing* the number of sophisticated taxes.

[32] Using an alternative measure of sophisticated taxes (which includes general taxation as a 'simple' tax), conflicts explain $\frac{1.042 \times 2.360}{7.4811} \times 100 \approx 33\%$ of the increase in tax sophistication.

[33] With time-varying borders, a concern could be that periods of warfare both increase the numerator (more cities in a territory see conflict) and lower the denominator (territories lose cities) of the conflict intensity measure. This would cause us to systematically overstate conflict intensity. Fortunately, our results are almost identical when using fixed borders, suggesting that this is not a major concern.

4.4.2 Conflict Exposure at the City Level

So far, we have assigned conflicts at territory levels. The reasoning behind this is that cities' decisions depend not only on actual conflict, but on the threat of conflict (for which the overall conflict intensity of the territory is a good measure). Are the effects of conflicts different when measured at the city level? To test this, in Table A4 we measure conflict at the city level: the conflict treatment is now an indicator taking a value of one if the city is exposed to conflict in a given decade. At first, these coefficients appear to be much larger. However, since conflicts at the city-level are now measured as an indicator variable, experiencing a conflict corresponds to an increase in the previously used conflict intensity measure from 0 to 100%. For this reason, when the effect is normalised with respect to the mean, it is comparable to the benchmark results presented above.

4.4.3 Different Nobility Centrality Instruments

To probe for the robustness with respect to the definition of our instrument, we consider the following changes in defining the nobility centrality instrument. First, instead of taking the maximum centrality of nobles in a territory we consider the average centrality in Table A5. The most connected noble is important for determining the relationship between network centrality and conflicts, as shown in the benchmark results. However, it is possible that several influential individuals also drive this relationship, which would not be picked up when considering only the most well-connected noble. The results reported in Table A5 are statistically indistinguishable from the benchmark results.

The creation of links in a network is a potential choice of nobles. In our benchmark estimates, we control for changes in centrality stemming from nobles' immediate links by controlling for their degree centrality. A further check to shut down this channel is to consider nobles' network neighbours directly. In Tables A6 and A7 we use the maximum and average connectedness of a nobles' intermediate neighbours in the network. We call these neighbours *linked nobles*. A reduction in a noble's *neighbour's* centrality is unlikely to be the noble's own choice, but might

still affect his or her conflict exposure.[34] The results in Tables A6 and A7 are similar to the benchmark results both in terms of the first and the second stage results. The choice of which nobles to use with respect to the formation or breaks of their networks therefore does not appear to substantially affect our results.

4.4.4 Keeping Cities in 'Small States'

As described in Section 3 above, our benchmark estimates omit cities in small 'Small States of the Holy Roman Empire' following Cantoni et al. (2018). Table A8 repeats the main analysis on the political institution outcomes including these cities. The signs of all coefficients remain unchanged, although the magnitude and significance for the council size and division of power outcomes drop. This is likely due to the noise added by the small state cities for which border assignments cannot be accurately made.[35] The result on citizens electing their council following a conflict is as before. The results are therefore not entirely explained away by the inclusion these cities, yet the results confirm our reasoning for excluding them from the main estimation sample.

4.4.5 Dropping Individual Centuries

Finally, we test for the sensitivity of our results to events in specific centuries by repeating the political institution regressions while excluding each century one-by-one. The results are reported in Table A9, where each panel represents one of the three political institution outcomes, and each column shows the omitted century in a given regression. Results are mostly stable, significant and comparable to the main results for almost all of the excluded centuries. The only period which has a marked impact on our results is the 17th century in column 5 without which results not only become significantly larger but also noisier.

[34] Through mutual assistance pacts where a noble has to help in their neighbour's defence or military campaign, for example.

[35] In particular, it becomes less straight-forward to determine which cities truly belong to the same territory, hence including these cities introduces measurement error in the conflict variable.

5 Conclusion

We take a novel perspective on the rise of inclusive political institutions and state capacity by looking at the local level over 550 years. At the local level, participation of different groups in political institutions pre-dates the rise of regional or national assemblies, and can be considered one precursor on the way to more inclusive institutions at all levels of governance. Using novel city-level data from the German lands, we she new light on the causal link between warfare and local political institutions and (local) fiscal capacity.

We combine city-level information on battles, existence and features of city councils, as well as various tax types, with rich data on the centrality of German nobles in the wider European nobility network. A reduction in the centrality of nobles following changes in the structure of the nobility network leads to a greater conflict intensity in the affected territories. Higher conflict intensity, in turn, shifts towards more sophisticated taxes, confirming (Tilly, 1990) hypothesis that warfare underpins the expansion of the fiscal capacity of states. Furthermore, we show that conflict had important effects on early forms of local democratization: councils increasingly were elected by citizens, were larger in size, and were more likely to be independent of other institutions as a result of episodes of conflict. This is consistent with there being an often-hypothesized tradeoff: in order to expand the fiscal capacity of their polities to fund wars, rulers had to make concessions to their subjects by democratizing political institutions.

Taken together, these results paint a clear picture of the central role of warfare in shaping the course of development in the German lands.

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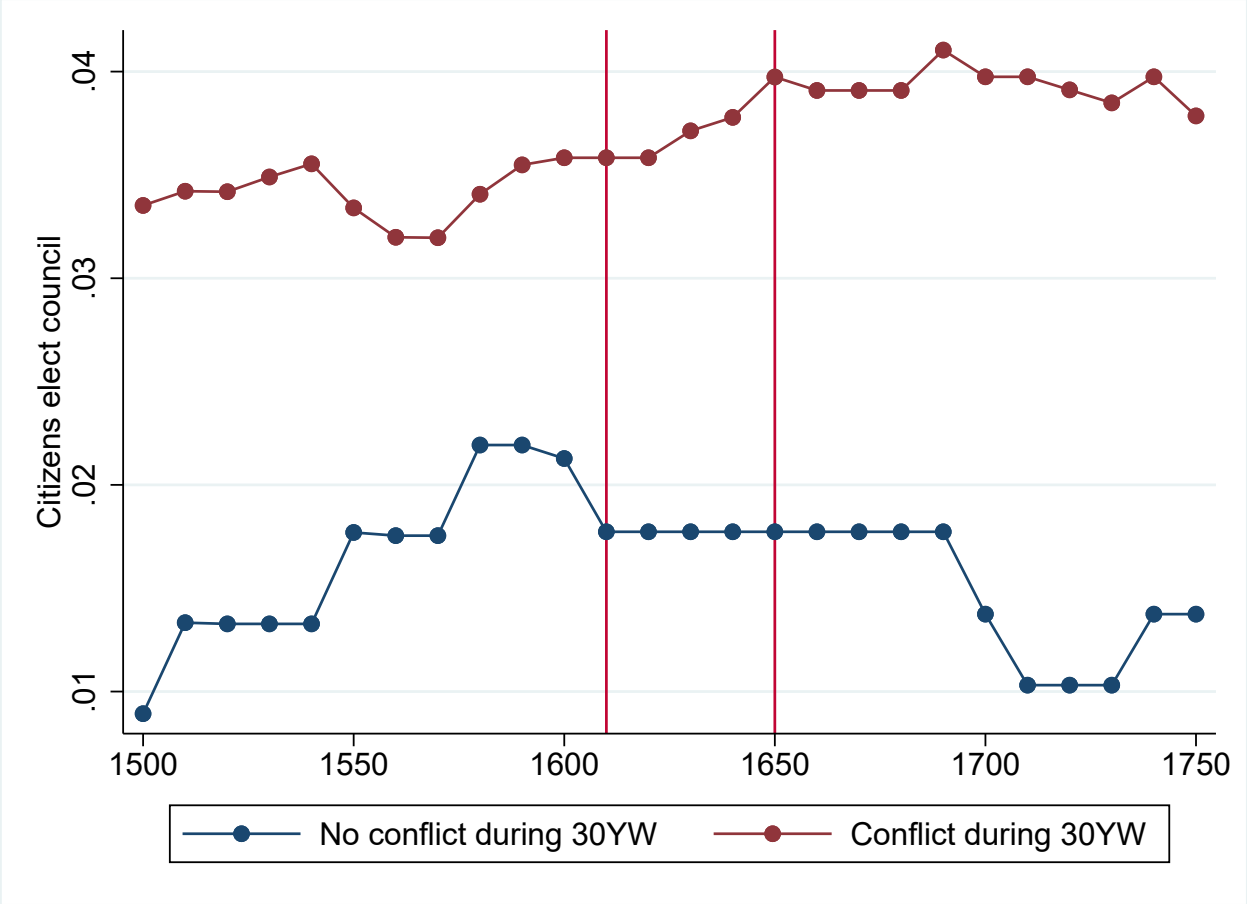
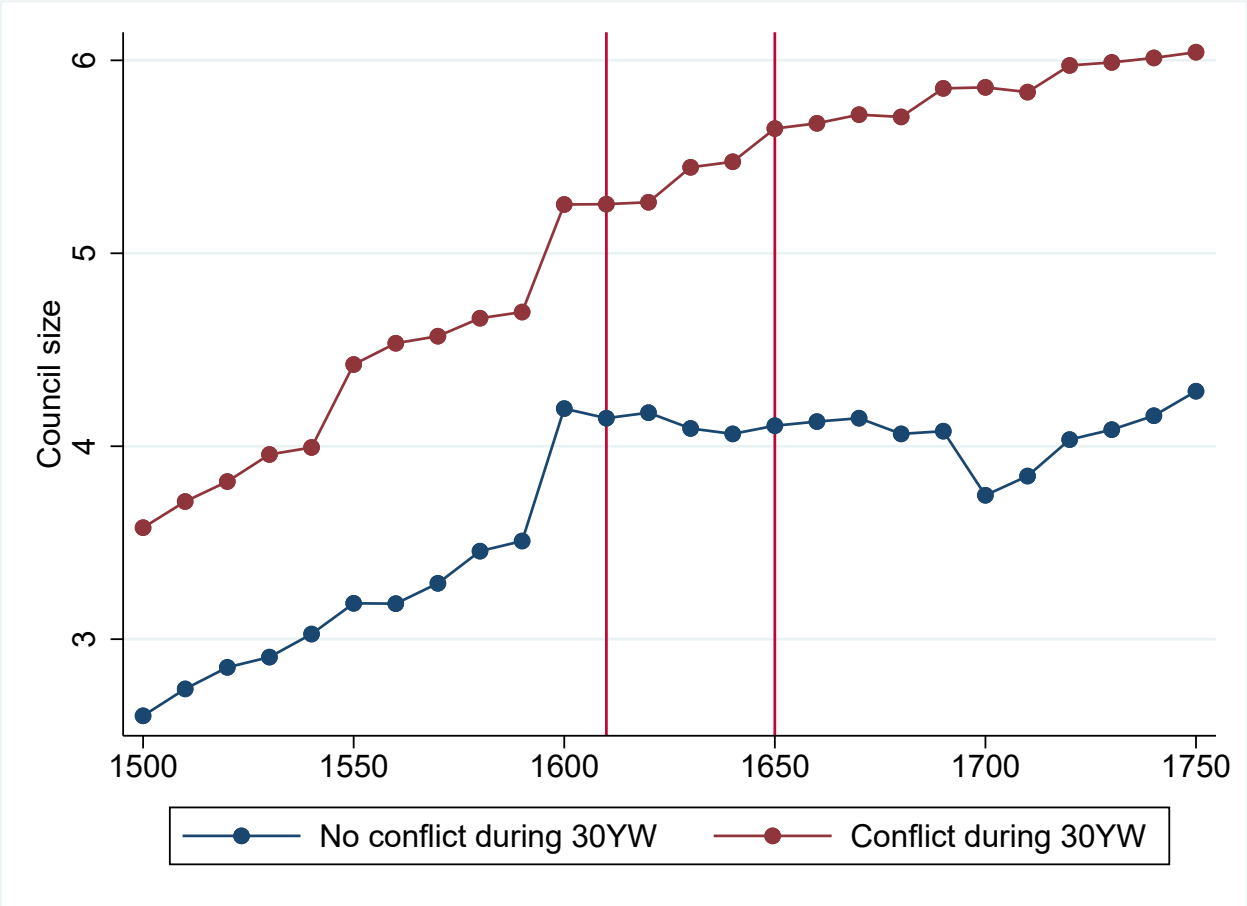
Figures

Figure 1: Involvement in the Thirty Years' War and Citizens' Elections of Councils



Note: Evolution of probability that citizens elect council. Averages shown over time separately for those cities that did (red) and did not (blue) experience conflict during the Thirty Years' War (marked with vertical red lines).

Figure 2: Involvement in the Thirty Years' War and Council Size



Note: Evolution of the size of the council. Averages shown over time separately for those cities that did (red) and did not (blue) experience conflict during the Thirty Years' War (marked with vertical red lines).

Tables

Table 1: Summary Statistics

Panel A: Full Sample					
	Obs.	Mean	St. Dev.	Min	Max
Has executive	33076	0.47	0.50	0	1
Has judiciary	33076	0.13	0.34	0	1
Has council	33076	0.44	0.50	0	1
Council elected by citizens	33076	0.02	0.15	0	1
Council elected by citizens (cond. on having council)	14453	0.05	0.22	0	1
Council size	33076	3.91	8.66	0	341
Council size (cond. on having council)	14453	8.79	11.27	0	341
Exec. or judic. overlap with council	33076	0.11	0.32	0	1
Exec. or judic. overlap with council (cond. on having council)	14453	0.26	0.44	0	1
Share of cities in territory involved in conflict (%)	33076	2.32	6.05	0	100
Harmonic centr. of best-connected noble in territory	33076	22.38	27.08	0	148
Harm. centr. of best-conn. noble in terr. (cond. on having nobles)	28438	25.69	27.54	0	148
Average degree centr. of nobles in territory	33076	0.26	0.56	0	13
Av. degree centr. of nobles in terr. (cond. on having nobles)	28438	0.30	0.59	0	13
Panel B: Bairoch Sample					
	Obs.	Mean	St. Dev.	Min	Max
Has executive	4760	0.68	0.47	0	1
Has judiciary	4760	0.22	0.41	0	1
Has council	4760	0.70	0.46	0	1
Council elected by citizens	4760	0.04	0.20	0	1
Council elected by citizens (cond. on having council)	3331	0.06	0.24	0	1
Council size	4760	10.61	15.91	0	341
Council size (cond. on having council)	3331	14.98	17.17	0	341
Exec. or judic. overlap with council	4760	0.24	0.43	0	1
Exec. or judic. overlap with council (cond. on having council)	3331	0.34	0.47	0	1
Share of cities in territory involved in conflict (%)	4760	2.40	6.25	0	100
Harmonic centr. of best-connected noble in territory	4760	21.55	27.28	0	148
Harm. centr. of best-conn. noble in terr. (cond. on having nobles)	3885	26.18	28.02	0	148
Average degree centr. of nobles in territory	4760	0.36	0.83	0	13
Av. degree centr. of nobles in terr. (cond. on having nobles)	3885	0.44	0.90	0	13
Total number of taxes	4760	1.31	2.03	0	14
Number of simple taxes	4760	0.95	1.45	0	11
Number of sophisticated taxes	4760	0.22	0.59	0	4
Ratio sophisticated : simple taxes	1350	38.58	70.25	0	400

Note: The full sample (Panel A) covers the 1472 cities in the *Städtebuch* that are not in a 'Small State of the Holy Roman Empire' in the *Euratlas* at a decadal basis over the period 1200-1750. The Bairoch sample (Panel B) covers the subset of cities also in Bairoch et al. (1988). Variables are defined as follows. **Political institution variables**: 'Has executive' is a binary variables equal to one if the city has a mayor or sheriff. 'Has judiciary' is a binary variable equal to one if the city has a judge. 'Has council' is a binary variable equal to one if the city has a council. 'Council elected by citizens' is a binary variable equal to one if the city has a council which is elected by citizens without the interference of the local lord. 'Council size' is a count variable of the number of members on the council. 'Exec. or judic. overlap with council' is a binary variable equal to one if the mayor, sheriff or judge is a council member. **Conflict variables**: 'Share of cities in territory involved in conflict' is the count of cities in the territory involved in conflict divided by the total number of cities in territory. **Nobility variables**: 'Harmonic centrality of best-connected noble in territory' is the maximum harmonic centrality observed for a noble associated with the territory (see text for details on calculating harmonic centrality. 'Average degree centr. of nobles in territory' is the average number of links that nobles in the territory have to other nobles. **Taxation variables**: 'Total number of taxes' is a count of the taxes that are active in the city. 'Number of simple taxes' and 'Number of sophisticated taxes' break these down into two distinct classifications (see text for a discussion). 'Ratio sophisticated : simple taxes' divides the number of sophisticated taxes by the number of simple taxes.

Table 2: First Stage - Nobility Centrality and Conflict

	Dependent Variable: Conflict Intensity (%)					
	(1)	(2)	(3)	(4)	(5)	(6)
Max. Harmonic Centrality	-0.013***	-0.013***				
	(0.004)	(0.004)				
Avg. Harmonic Centrality			-0.015***	-0.015***		
			(0.005)	(0.004)		
Max. Harmonic Centrality (Linked Nob.)					-0.012***	-0.012***
					(0.004)	(0.004)
Degree Centrality		-0.034		-0.016		-0.046
		(0.171)		(0.165)		(0.173)
Observations	33,076	33,076	33,076	33,076	33,076	33,076
Territories	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472
Outcome mean	2.182	2.182	2.182	2.182	2.182	2.182

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma \text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles within the wider European nobility network (see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Second Stage - Conflict and Council Elections

	Dependent Variable: Citizens Elect Council (1 = yes)					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	IV	IV	IV	IV
Conflict Intensity t-1 (%)	0.000	0.000	0.004*	0.003*	0.003*	0.003*
	(0.000)	(0.000)	(0.002)	(0.002)	(0.002)	(0.002)
Council Present (1=yes)		0.028***		0.028***		0.028***
		(0.008)		(0.008)		(0.008)
Degree Centrality					-0.001	-0.001
					(0.003)	(0.003)
Observations	33,076	33,076	33,076	33,076	33,076	33,076
Territories	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472
Outcome mean	0.024	0.024	0.024	0.024	0.024	0.024
Kleibergen-Paap F stat			10.213	10.183	10.322	10.272
$\beta \times 100$/(outcome mean)			14.906	14.146	13.918	12.616

Note: OLS and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). Council Present is an indicator variable taking a value of one if a council is present in the city. Degree Centrality measures a territory's nobles' direct links to other nobles. All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Second Stage - Conflict and Council Size

	Dependent Variable: Size of Council					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	IV	IV	IV	IV
Conflict Intensity t-1 (%)	0.010	0.009	0.452*	0.412**	0.370*	0.301*
	(0.009)	(0.007)	(0.240)	(0.201)	(0.210)	(0.163)
Council Present (1=yes)		6.169***		6.146***		6.162***
		(0.455)		(0.444)		(0.447)
Degree Centrality					-0.233	-0.315
					(0.243)	(0.212)
Observations	33,076	33,076	33,076	33,076	33,076	33,076
Territories	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472
Outcome mean	3.229	3.229	3.229	3.229	3.229	3.229
Kleibergen-Paap F stat			10.213	10.183	10.322	10.272
$\beta \times 100$/(outcome mean)			14.000	12.757	11.466	9.336

Note: OLS and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Council Size is a count variable of the number of members of the city council. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). Council Present is an indicator variable taking a value of one if a council is present in the city. Degree Centrality measures a territory's nobles' direct links to other nobles. All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Second Stage - Conflict and Division of Power

	Dependent Variable: Executive or Judiciary Overlaps with Council (1 = yes)					
	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	IV	IV	IV	IV
Conflict Intensity t-1 (%)	-0.000	-0.000	-0.016*	-0.018*	-0.013	-0.016
	(0.000)	(0.000)	(0.010)	(0.009)	(0.010)	(0.010)
Council Present (1=yes)		0.247***		0.248***		0.247***
		(0.046)		(0.046)		(0.046)
Degree Centrality					0.010	0.007
					(0.007)	(0.007)
Observations	33,076	33,076	33,076	33,076	33,076	33,076
Territories	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472
Outcome mean	0.081	0.081	0.081	0.081	0.081	0.081
Kleibergen-Paap F stat			10.213	10.183	10.322	10.272
$\beta \times 100$/(outcome mean)			-20.457	-22.464	-16.184	-19.613

Note: OLS and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). Council Present is an indicator variable taking a value of one if a council is present in the city. Degree Centrality measures a territory's nobles' direct links to other nobles. All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Conflict and Taxation - OLS

	Short-Run Effect on Taxes in t			
	(1) No. of all Taxes	(2) Share of sophist. Taxes	(3) Share of sophist. Taxes (alt.)	(4) Share of sophist. Taxes incl. Business
Conflict Intensity t-1	-0.000	0.035	0.067	0.120
	(0.004)	(0.222)	(0.074)	(0.211)
Observations	4,760	1,336	2,142	1,336
Territories	96	53	71	53
Outcome mean	1.005	31.438	14.104	47.851
$\beta \times 100$/(outcome mean)	-0.005	0.112	0.477	0.250
	Long-Run Effect on Taxes in $t+5$			
	(1)	(2)	(3)	(4)
Conflict Intensity t-1	0.002	0.124	-0.009	0.229
	(0.003)	(0.156)	(0.041)	(0.177)
Observations	4,101	1,214	1,941	1,214
Territories	93	51	70	51
Outcome mean	1.055	31.872	14.334	48.118
$\beta \times 100$/(outcome mean)	0.179	0.389	-0.062	0.477

Note: OLS regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. No. of all taxes counts the total number of taxes levied in a city in a given decade. Share of sophisticated taxes is the share of sophisticated to simple taxes (see text for details). Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the city level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

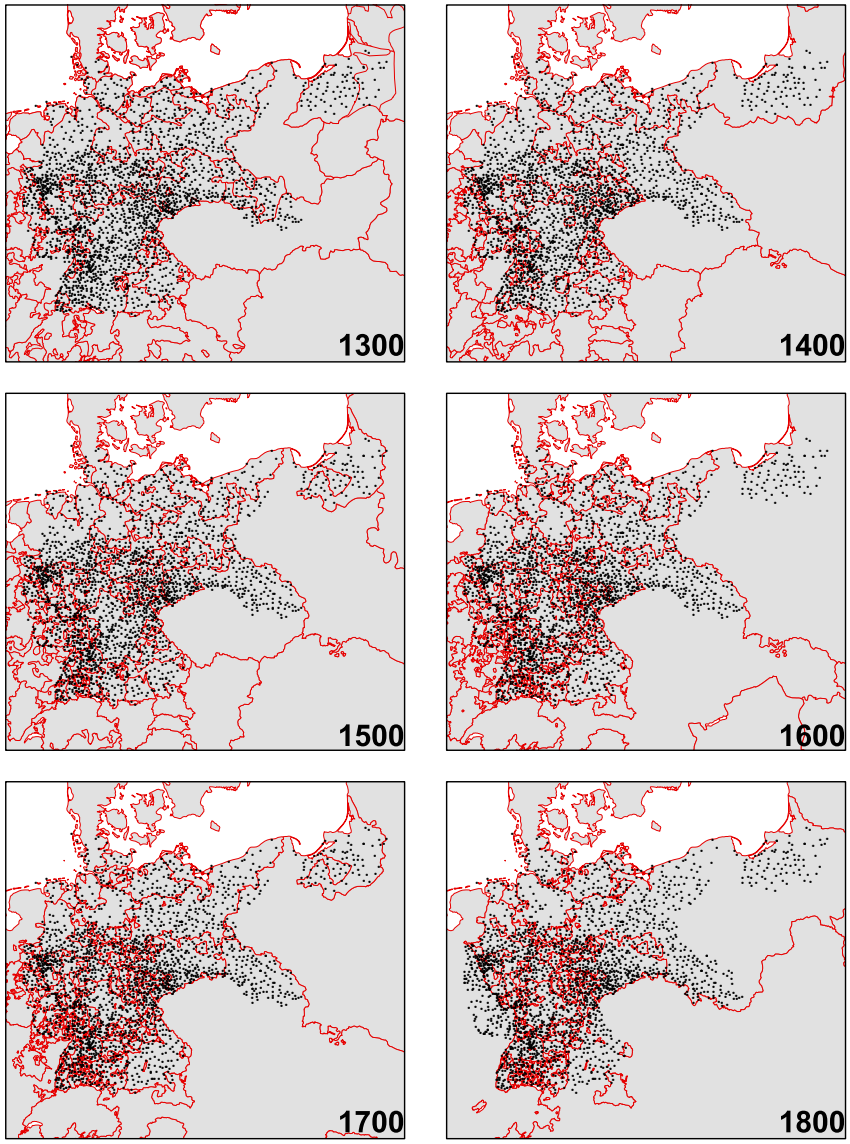
Table 7: Conflict and Taxation - Instrumental Variables

	Short-Run Effect on Taxes in t			
	(1) No. of all Taxes	(2) Share of sophist. Taxes	(3) Share of sophist. Taxes (alt.)	(4) Share of sophist. Taxes incl. Business
Conflict Intensity t-1	-0.105***	3.987***	1.064***	3.676***
	(0.021)	(0.493)	(0.189)	(0.402)
Observations	4,760	1,350	2,149	1,350
Territories	96	59	73	59
Kleibergen-Paap F stat	15.447	15.447	15.447	15.447
Outcome mean	1.005	31.438	14.104	47.851
$\beta \times 100$/(outcome mean)	-10.495	12.684	7.542	7.682
	Long-Run Effect on Taxes in $t+5$			
	(1)	(2)	(3)	(4)
Conflict Intensity t-1	-0.031*	7.827***	2.460***	11.047***
	(0.019)	(1.137)	(0.368)	(1.367)
Observations	4,112	1,230	1,957	1,230
Territories	96	60	75	60
Kleibergen-Paap F stat	15.447	15.447	15.447	15.447
Outcome mean	1.055	31.872	14.334	48.118
$\beta \times 100$/(outcome mean)	-2.960	24.559	17.163	22.958

Note: Two-Sample 2SLS regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. No. of all taxes counts the total number of taxes levied in a city in a given decade. Share of sophisticated taxes is the share of sophisticated to simple taxes (see text for details). Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the city level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix: Additional Figures and Tables

Figure A1: Sovereign Territories in the German Lands, 1300-1800



Note: Fixed locations of *Stadtebuch* cities (black dots). Sovereign territories from *Euratlas* outlined each century (red lines). Sovereign territories are used to assign nobility network shocks and conflict intensity treatments to Keyser cities (see text for details).

Figure A2: The Peerage Example

Georg Wilhelm Herzog von Braunschweig-Lüneburg[1]

M, #102782, b. 16 January 1624, d. 28 October 1705

Last Edited=26 Jan 2011
Consanguinity Index=1.87%

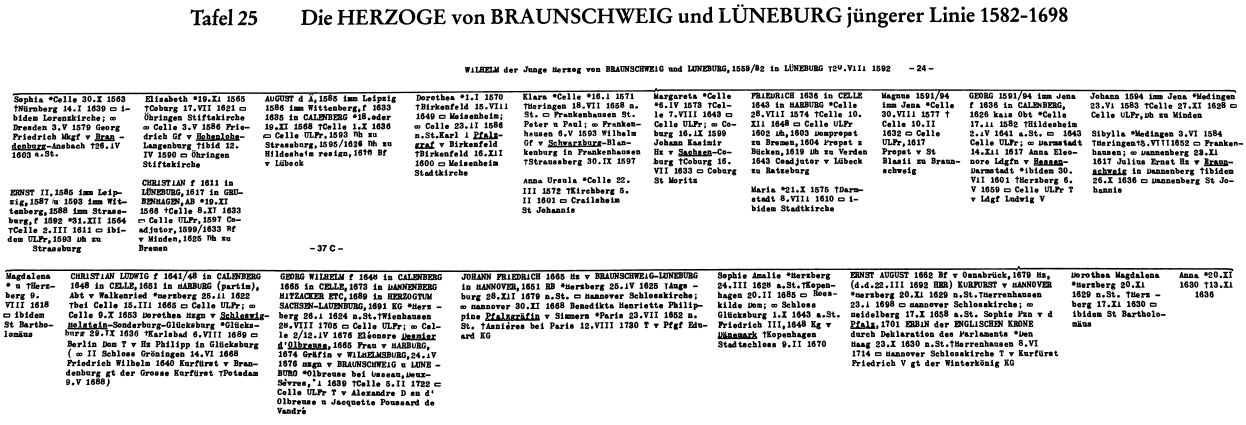
Georg Wilhelm Herzog von Braunschweig-Luneburg, 1690 [2]

Georg Wilhelm Herzog **von Braunschweig-Lüneburg** was born on 16 January 1624. He was the son of Georg Herzog **von Braunschweig-Lüneburg** and Anne Eleanore Prinzessin **von Hessen-Darmstadt**.[1] He married Eleonore **Desnier**, Countess of Williamsburg, daughter of Alexandre II **Desnier**, Marquis de Desmiers and Jacquette **Poussard**, on 15 September 1665. He died on 28 October 1705 at age 81 at Wienhausen, Germany[G].

He was a member of the House of Guelph.[1] He succeeded as the *Herzog von Braunschweig-Lüneburg* in 1641.[1]

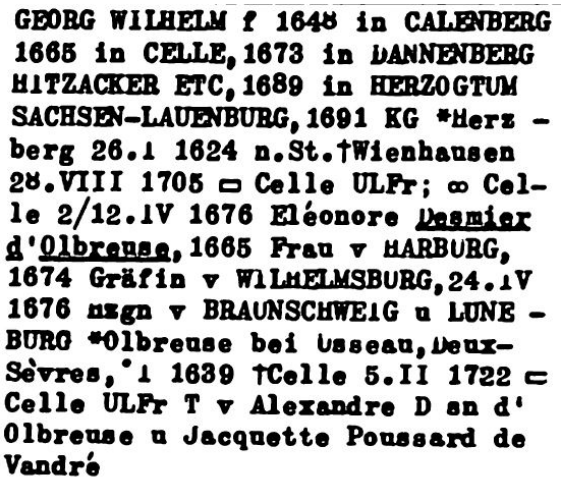
Note: Example from Darryl Lundy's genealogical website *The Peerage* (http://www.thepeerage.com/, accessed 04/11/2017) for Georg Wilhelm, Duke of Braunschweig and Lüneburg. Georg Wilhelm is one of the over 680,000 nobles we use to reconstruct the European nobility network each year (see text for details).

Figure A3: Family Tree Example - The Lords of Braunschweig and Lüneburg, 1582-1698



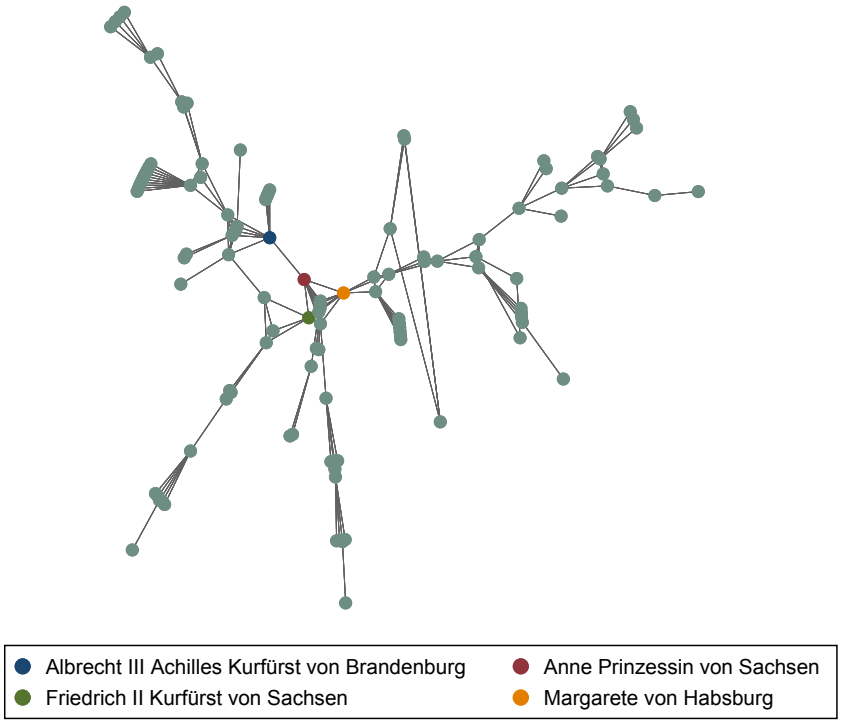
Note: Family tree example from the *Europäische Stammtafeln* (Schwennicke, 1998). Life events are represented by the following symbols for birth *, deaths †, marriage ⚭, burial □, battle deaths are marked by two crossed swords. We use these family trees primarily to associate nobles to cities and territories within the German lands, but also to supplement the information from the *Peerage*.

Figure A4: Family Tree - Individual Entry



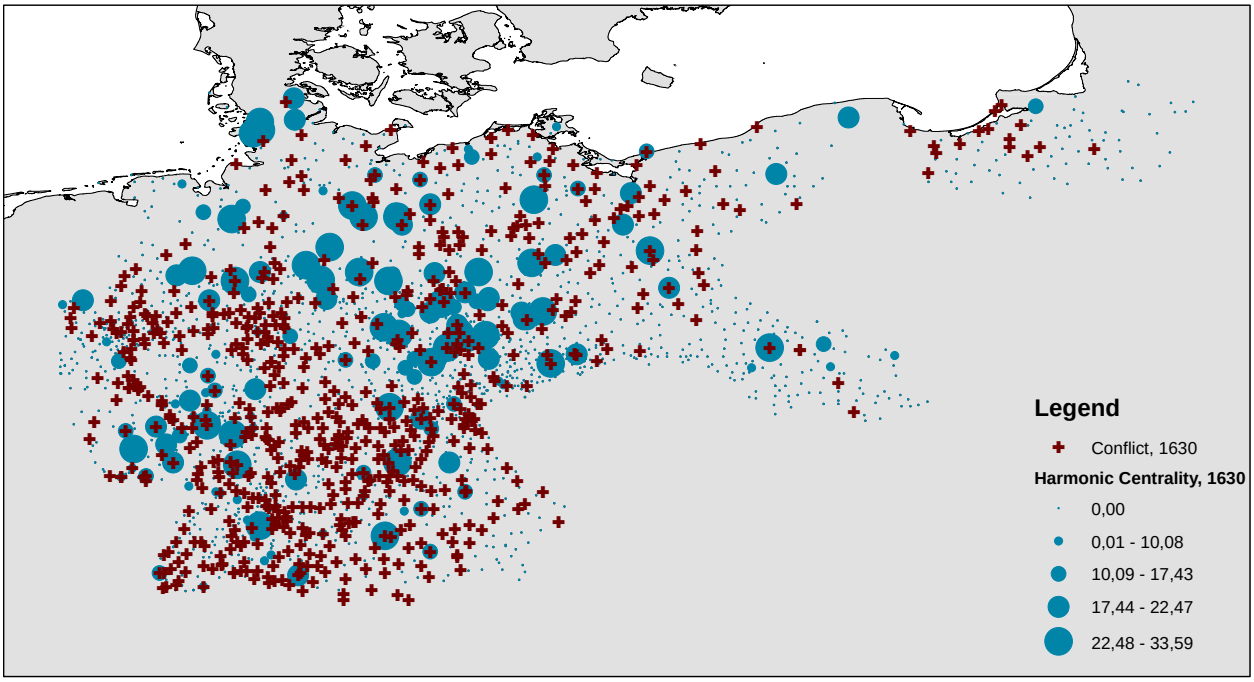
Note: Individual entry within a family tree (zoomed in) from the *Europäische Stammtafeln* (Schwennicke, 1998). The example shows Georg Wilhelm of the House of Braunchweig and Lüneburg. The most relevant information of the entry include the cities of residences and death, year of birth, marriage, and death, the name and title of his wife and her family (Eleonore Desmier d'Olbreuse).

Figure A5: Example Nobility Network and Most Central Individuals, 1460



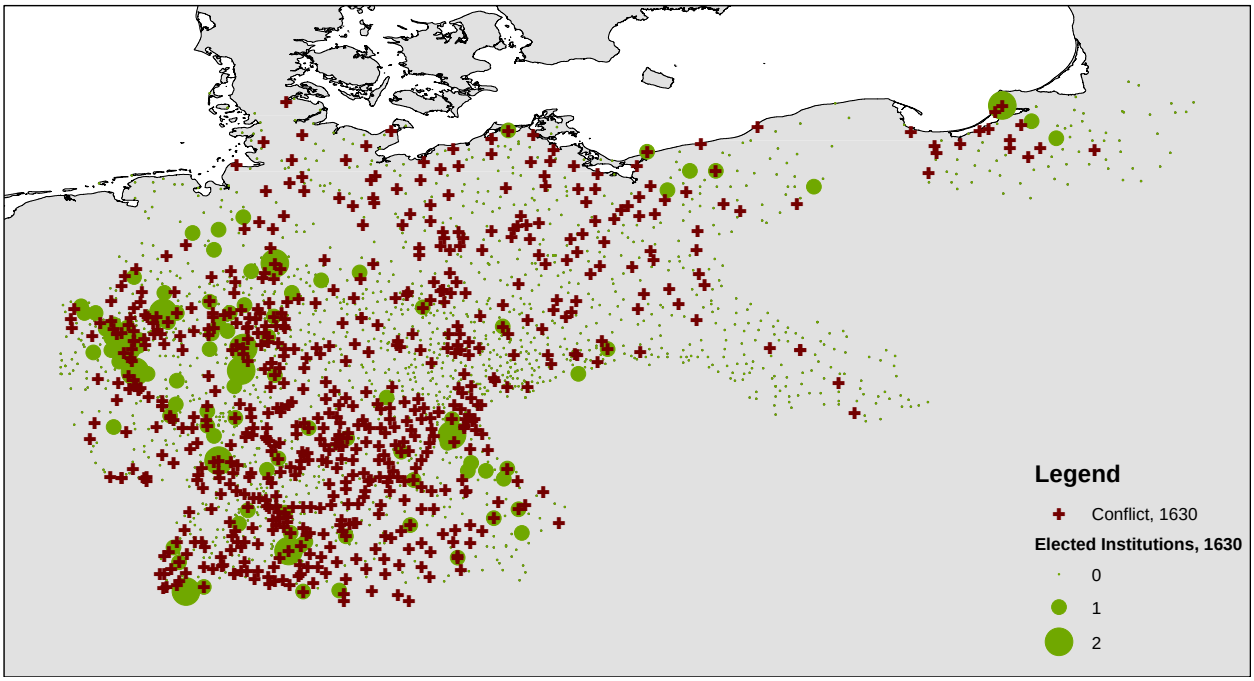
Note: An example of a nobility network in the year 1460 (only the largest component shown). The four most central individuals (as measured by harmonic centrality, see text) highlighted. Nodes positioned for visualisation purposes using multidimensional scaling (node positions therefore do not correspond, for example, to geographic locations of nobles).

Figure A6: Spatial Distribution of City Network Centrality and Conflicts



Note: Spatial relationship between cities' nobles' harmonic centrality and the occurrence of violent conflicts in the cross-section of 1630 in the German lands.

Figure A7: Spatial Distribution of Elected Institutions and Conflicts



Note: Spatial relationship between cities' exposure to conflict and institutions elected by citizens in the cross-section of 1630 in the German lands.

Table A1: Institutions Results for Bairoch Cities

	(1) Citizens elect Council	(2) Council Size	(3) Division of Power	(4) Citizens elect Council	(5) Council Size	(6) Division of Power
Conflict Intensity t-1	0.010***	0.764***	-0.036***	0.012***	0.235*	-0.034***
	(0.002)	(0.149)	(0.008)	(0.002)	(0.138)	(0.008)
Observations	4,760	4,760	4,760	4,760	4,760	4,760
Territories	96	96	96	96	96	96
Cities	196	196	196	196	196	196
Kleibergen-Paap F stat	16.073	16.073	16.073	14.993	14.993	14.993
Outcome mean	0.024	3.229	0.081	0.024	3.229	0.081
$\beta \times 100$/(outcome mean)	40.150	23.675	-44.483	48.792	7.283	-42.379
Degree centr. control				Yes	Yes	Yes

Note: Two-Sample 2SLS regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Institutions Results with Conflicts Assigned at Fixed Territory Borders

	(1) Conflict Intensity t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict Intensity t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.017***				-0.016***			
	(0.006)				(0.006)			
Conflict Intensity t-1		0.003*	0.335**	-0.015*		0.003*	0.251*	-0.013
		(0.001)	(0.164)	(0.008)		(0.001)	(0.135)	(0.008)
Council present (1=yes)		0.028***	6.117***	0.249***		0.028***	6.139***	0.249***
		(0.008)	(0.441)	(0.046)		(0.008)	(0.445)	(0.046)
Degree Centrality					-0.115	-0.001	-0.296	0.006
					(0.269)	(0.003)	(0.220)	(0.008)
Observations	33,081	33,081	33,081	33,081	33,081	33,081	33,081	33,081
Territories	157	157	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472	1,472	1,472
Kleibergen-Paap F stat		7.766	7.766	7.766		7.362	7.362	7.362
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
$\beta \times 100$/(outcome mean)		11.498	10.371	-18.252		10.483	7.760	-16.287

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma\text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta\text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles within the wider European nobility network (see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Taxation Results with Conflicts Assigned at Fixed Territory Borders

	Short-Run Effect on Taxes in t			
	(1) No. of all Taxes	(2) No. of simple Taxes	(3) No. of sophisticated Taxes	(4) Share of sophist. Taxes
Conflict Intensity t-1	-0.083***	3.156***	0.842***	2.909***
	(0.016)	(0.412)	(0.155)	(0.328)
Observations	4,760	1,350	2,149	1,350
Territories	96	59	73	59
Kleibergen-Paap F stat	13.911	13.911	13.911	13.911
Outcome mean	1.005	31.438	14.104	47.851
$\beta \times 100$/(outcome mean)	-8.307	10.039	5.969	6.080
	Long-Run Effect on Taxes in $t+5$			
	(1)	(2)	(3)	(4)
Conflict Intensity t-1	-0.025*	6.195***	1.947***	8.744***
	(0.015)	(0.991)	(0.309)	(1.199)
Observations	4,112	1,230	1,957	1,230
Territories	96	60	75	60
Kleibergen-Paap F stat	13.911	13.911	13.911	13.911
Outcome mean	1.055	31.872	14.334	48.118
$\beta \times 100$/(outcome mean)	-2.343	19.438	13.585	18.172

Note: Two-Sample 2SLS regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. No. of all taxes counts the total number of taxes levied in a city in a given decade. Share of sophisticated taxes is the share of sophisticated to simple taxes (see text for details). Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Institutions Results with Conflicts Assigned at the City Level

	(1) Conflict t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.000***				-0.000***			
	(0.000)				(0.000)			
Conflict t-1 (1=yes)		0.280*	33.343**	-1.466*		0.256*	24.807*	-1.314
		(0.147)	(16.222)	(0.807)		(0.148)	(13.377)	(0.832)
Council present (1=yes)		0.027***	6.043***	0.253***		0.027***	6.084***	0.252***
		(0.008)	(0.483)	(0.045)		(0.008)	(0.475)	(0.046)
Degree Centrality					-0.001	-0.001	-0.302	0.005
					(0.003)	(0.003)	(0.223)	(0.008)
Observations	32,895	32,895	32,895	32,895	32,895	32,895	32,895	32,895
Territories	157	157	157	157	157	157	157	157
Cities	1,471	1,471	1,471	1,471	1,471	1,471	1,471	1,471
Kleibergen-Paap F stat		7.953	7.953	7.953		7.543	7.543	7.543
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
β /(outcome mean)		11.690	10.327	-18.200		10.675	7.683	-16.317

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma\text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta\text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict is an indicator taking a value of one if the city is involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles within the wider European nobility network (see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Institutions Results with IV Defined as Average Harmonic Centrality

	(1) Conflict Intensity t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict Intensity t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.015***				-0.014***			
	(0.004)				(0.004)			
Conflict Intensity t-1		0.004*	0.403*	-0.020*		0.003	0.278	-0.018*
		(0.002)	(0.208)	(0.011)		(0.002)	(0.171)	(0.010)
Council present (1=yes)		0.028***	6.147***	0.248***		0.028***	6.163***	0.247***
		(0.008)	(0.446)	(0.046)		(0.008)	(0.449)	(0.046)
Degree Centrality					-0.020	-0.001	-0.320	0.006
					(0.164)	(0.003)	(0.213)	(0.007)
Observations	33,076	33,076	33,076	33,076	33,076	33,076	33,076	33,076
Territories	157	157	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472	1,472	1,472
Kleibergen-Paap F stat		10.704	10.704	10.704		11.548	11.548	11.548
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
$\beta \times 100$/(outcome mean)		15.088	12.486	-25.391		13.459	8.602	-22.473

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma \text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles within the wider European nobility network (see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Institutions Results with IV Defined as Harmonic Centrality of Linked Nobles

	(1) Conflict Intensity t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict Intensity t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.014***				-0.014***			
	(0.005)				(0.005)			
Conflict Intensity t-1		0.003*	0.332**	-0.016*		0.002	0.247*	-0.014
		(0.002)	(0.167)	(0.009)		(0.002)	(0.139)	(0.009)
Council present (1=yes)		0.028***	6.117***	0.249***		0.028***	6.140***	0.249***
		(0.008)	(0.441)	(0.046)		(0.008)	(0.445)	(0.046)
Degree Centrality					-0.131	-0.001	-0.297	0.005
					(0.270)	(0.003)	(0.220)	(0.008)
Observations	33,081	33,081	33,081	33,081	33,081	33,081	33,081	33,081
Territories	157	157	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472	1,472	1,472
Kleibergen-Paap F stat		7.321	7.321	7.321		6.861	6.861	6.861
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
$\beta \times 100$/(outcome mean)		11.323	10.288	-19.694		10.283	7.654	-17.884

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma \text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles' network neighbours (*linked nobles*, see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Institutions Results with IV Defined as Average Harmonic Centrality of Linked Nobles

	(1) Conflict Intensity t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict Intensity t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.016***				-0.015***			
	(0.005)				(0.005)			
Conflict Intensity t-1		0.003*	0.340**	-0.017*		0.003*	0.254*	-0.015*
		(0.002)	(0.158)	(0.008)		(0.002)	(0.131)	(0.009)
Council present (1=yes)		0.028***	6.116***	0.249***		0.028***	6.139***	0.249***
		(0.008)	(0.445)	(0.046)		(0.008)	(0.449)	(0.046)
Degree Centrality					-0.114	-0.001	-0.294	0.005
					(0.263)	(0.003)	(0.222)	(0.008)
Observations	33,081	33,081	33,081	33,081	33,081	33,081	33,081	33,081
Territories	157	157	157	157	157	157	157	157
Cities	1,472	1,472	1,472	1,472	1,472	1,472	1,472	1,472
Kleibergen-Paap F stat		8.672	8.672	8.672		8.578	8.578	8.578
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
$\beta \times 100$/(outcome mean)		12.292	10.545	-20.808		11.334	7.861	-19.074

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma \text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles' network neighbours (*linked nobles*, see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Institutions Results without Exclusion of Small States

	(1) Conflict Intensity t-1	(2) Citizens elect Council	(3) Council Size	(4) Division of Power	(5) Conflict Intensity t-1	(6) Citizens elect Council	(7) Council Size	(8) Division of Power
Harmonic Centrality	-0.015***				-0.015***			
	(0.004)				(0.004)			
Conflict Intensity t-1		0.006**	0.219	-0.005		0.007***	0.207	-0.005
		(0.002)	(0.196)	(0.008)		(0.003)	(0.199)	(0.008)
Council present (1=yes)		0.043***	6.999***	0.270***		0.043***	6.999***	0.270***
		(0.010)	(0.467)	(0.033)		(0.010)	(0.467)	(0.034)
Degree Centrality					-0.039	0.002	-0.034	0.001
					(0.102)	(0.002)	(0.152)	(0.005)
Observations	51,382	51,382	51,382	51,382	51,382	51,382	51,382	51,382
Territories	208	208	208	208	208	208	208	208
Cities	1,855	1,855	1,855	1,855	1,855	1,855	1,855	1,855
Kleibergen-Paap F stat		17.080	17.080	17.080		16.754	16.754	16.754
Outcome mean		0.024	3.229	0.081		0.024	3.229	0.081
$\beta \times 100$/(outcome mean)		25.858	6.795	-6.819		28.717	6.407	-6.284

Note: First stage regressions of the form $\text{Conflict}_{s,t-1} = \alpha_i + \lambda_t + \gamma\text{Centrality}_{s,t-1} + X'_{ist}\phi + \nu_{st}$, and IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta\text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade. Harmonic Centrality measures the centrality of a territory's nobles within the wider European nobility network (see text for details). Degree Centrality measures a territory's nobles' direct links to other nobles. Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: 2SLS Institutions Results Excluding Centuries One-by-One

	Panel A: Citizens Elect Council					
	(1)	(2)	(3)	(4)	(5)	(6)
	1200	1300	1400	1500	1600	1700
Conflict Intensity t-1	0.002	0.004*	0.002	0.003*	0.019	0.004*
	(0.002)	(0.002)	(0.001)	(0.002)	(0.031)	(0.002)
Observations	30,422	28,733	28,061	25,683	24,784	27,662
Territories	156	155	153	150	136	140
Cities	1,461	1,441	1,447	1,414	1,365	1,358
Kleibergen-Paap F stat	9.781	8.587	12.452	7.474	0.435	7.326
Outcome mean	0.026	0.025	0.023	0.022	0.022	0.022
$\beta \times 100$/(outcome mean)	8.464	14.243	9.961	15.119	88.494	16.948
	Panel B: Council Size					
	(1)	(2)	(3)	(4)	(5)	(6)
	1200	1300	1400	1500	1600	1700
Conflict Intensity t-1	0.262*	0.380*	0.324**	0.372**	2.108	0.513**
	(0.154)	(0.194)	(0.161)	(0.185)	(3.227)	(0.254)
Observations	30,422	28,733	28,061	25,683	24,784	27,662
Territories	156	155	153	150	136	140
Cities	1,461	1,441	1,447	1,414	1,365	1,358
Kleibergen-Paap F stat	9.781	8.587	12.452	7.474	0.435	7.326
Outcome mean	3.620	3.465	3.219	2.967	2.805	2.953
$\beta \times 100$/(outcome mean)	7.249	10.960	10.075	12.541	75.151	17.364
	Panel C: Division of Power					
	(1)	(2)	(3)	(4)	(5)	(6)
	1200	1300	1400	1500	1600	1700
Conflict Intensity t-1	-0.019**	-0.018*	-0.012	-0.019**	-0.066	-0.018*
	(0.009)	(0.010)	(0.008)	(0.009)	(0.120)	(0.009)
Observations	30,422	28,733	28,061	25,683	24,784	27,662
Territories	156	155	153	150	136	140
Cities	1,461	1,441	1,447	1,414	1,365	1,358
Kleibergen-Paap F stat	9.781	8.587	12.452	7.474	0.435	7.326
Outcome mean	0.091	0.089	0.081	0.075	0.068	0.071
$\beta \times 100$/(outcome mean)	-20.404	-20.176	-14.355	-24.910	-96.421	-25.265

Note: Each column re-runs the 2SLS analysis between the three institutional outcomes in panels A, B, and C, while dropping observations from a given century. The omitted century is specified in the column header and years refer to the beginning of a century, i.e. 1500 means 1500 to 1599. IV regressions of the form $y_{ist} = \alpha_i + \lambda_t + \beta \text{Conflict}_{s,t-1} + X'_{ist}\pi + \epsilon_{ist}$. Conflict Intensity (%) is the share of cities in a territory that are involved in conflict in a given decade, and is instrumented using the Harmonic Centrality of the most central noble in the territory (see text and Table 2 for details). Citizens Elect Council is an indicator variable taking a value of one if citizens of a city elect the council without the interference of the local lord. Council Size is a count variable of the number of members of the city council. Executive or Judiciary Overlaps with Council ('Division of Power') is an indicator variable taking a value of one if the executive or judiciary branches of city administration overlap with the council (see text for details). All regressions include city and decade fixed effects. Standard errors are reported in parentheses and are clustered at the territorial history level. Significance levels are denoted by * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.